

Genetic correlations between wood quality traits of *Pinus pinaster* Ait.

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Abstract - It is essential to understand how characteristics are related to each other in breeding programmes to select wood properties, in order to avoid that, in selecting for one trait, we are negatively affecting another. Moreover, measuring wood properties is time consuming and expensive. This study assesses genetic and phenotypic correlations between wood density components and spiral grain of 46 half-sib families of *Pinus pinaster* in seventeen-year-old trees. Results showed that genetic correlations for all wood density components were higher than corresponding phenotypic correlations. Furthermore, all wood density components were highly genetically correlated with ring density, and also closely associated among themselves. Results showed a higher genetic correlation of ring density with earlywood density ($r_g = 0.96$) than with latewood density ($r_g = 0.79$). A moderate to high positive genetic correlation was found between spiral grain and wood density characteristics (0.29–0.61). We conclude that ring density (overall wood density) can be improved by increasing either earlywood density, latewood percent, or both of these traits, and spiral grain can be modify in future plantations.

Key words: wood density components / spiral grain / heritability / genetic correlations / *Pinus pinaster* / tree breeding

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